# HIGH EFFICIENCY MULTIPLE-JUNCTION SOLAR CELLS

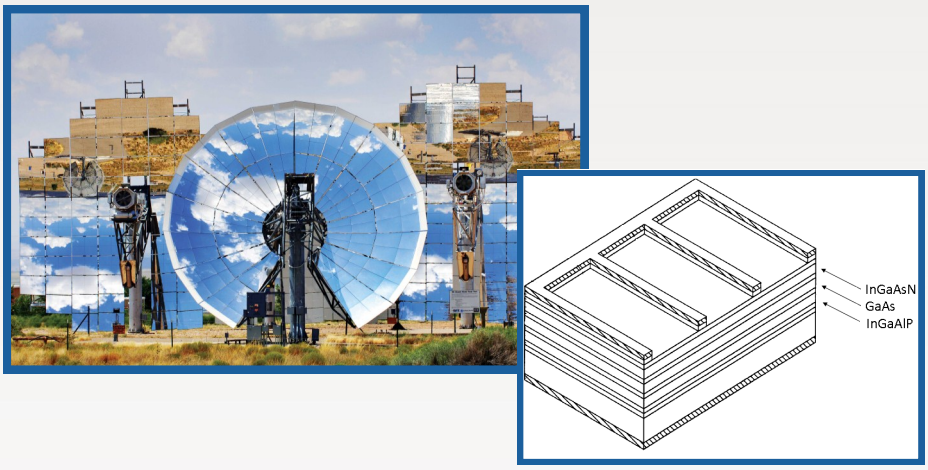
**TECHNOLOGY READINESS LEVEL: 3**

CRITICAL FUNCTIONS AND CONCEPTS HAVE BEEN PROVEN IN A LABORATORY SETTING

**US PATENT 5,944,913**

## TECHNOLOGY SUMMARY

Single junction solar cells have limited efficiency and fail to extract maximum energy from photons outside of a specific spectral region. Higher efficiency and optical to electrical energy conversion is achieved by stacking semiconductor p-n junction layers to capture energy from all spectral regions. This Sandia invention proposes growing layers of different semiconductor alloys on a semiconductor substrate to minimize band-gap energy loss providing a high efficiency multiple-junction solar cell array.




## POTENTIAL APPLICATIONS

- Satellite Space Power Systems
- Military and Commercial Solar Cells
- Concentrated Solar Power

## TECHNOLOGICAL BENEFITS

- Reduces Satellite Mass and Cell Array Size
- Reduces Launch and Maintenance Costs
- Increases Satellite Mission Lifetime
- High Efficiency of Light-to-Energy Conversion
- Eliminates Restrictions of Electrical Current Flow
- Captures Energy in Each Spectral Region

## TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

**ip@sandia.gov**

*Refer to SD # 6087*

or visit

**https://ip.sandia.gov**

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